

WHAT IS CLAIMED IS:

1 1. A method of time scale modification of a digital
2 audio signal comprising the steps of:
3 analyzing an input signal in a set of first equally
4 spaced, overlapping time windows having a first overlap amount
5 S_a ;
6 selecting a base overlap S_s for output synthesis
7 corresponding to a desired time scale modification;
8 calculating a cross-correlation $R[k]$ for index value k
9 between overlapping frames for a range of overlaps between
10 $S_s + k_{\min}$ to $S_s + k_{\max}$ for a fixed length overlap region;
11 selecting a value K yielding the greatest cross-
12 correlation value $R[k]$;
13 synthesizing an output signal in a set of second equally
14 spaced, overlapping time windows having a second overlap
15 amount equal to $S_s + K$.

1 2. The method of claim 1, wherein:
2 said step of calculating the cross-correlation $R[k]$
3 employs the equation
4

$$5 \quad R[k] = \sum_{i=initial_x}^{final_x} sign\{y[mS_s + i + k]\} \cdot sign\{x[mS_a + i]\}.$$

1 3. The method of claim 1, wherein:
2 said step of calculating the cross-correlation $R[k]$
3 employs only a center half of the overlap region for $k = 0$.

1 4. A digital audio apparatus comprising:
2 a source of a digital audio signal;
3 a digital signal processor connected to said source of a
4 digital audio signal programmed to perform time scale
5 modification on the digital audio signal by
6 analyzing an input signal in a set of first equally
7 spaced, overlapping time windows having a first overlap
8 amount,
9 selecting a base overlap S_s for output synthesis
10 corresponding to a desired time scale modification,
11 calculating a cross-correlation $R[k]$ for index value
12 k between overlapping frames for a range of overlaps
13 between $S_s + k_{\min}$ to $S_s + k_{\max}$ for a fixed length overlap
14 region;
15 selecting a value K yielding the greatest cross-
16 correlation value $R[k]$,
17 synthesizing an output signal in a set of second
18 equally spaced, overlapping time windows having a second
19 overlap amount equal to $S_s + K$; and
20 an output device connected to the digital signal
21 processor for outputting the time scale modified digital audio
22 signal.

1 5. The digital audio apparatus of claim 4, wherein:
2 said digital signal processor is programmed to calculate
3 the cross-correlation $R[k]$ employs the equation
4

$$5 \quad R[k] = \sum_{i=initial_x}^{final_x} sign\{y[mS_s + i + k]\} . sign\{x[mS_a + i]\} .$$

1 6. The digital audio apparatus of claim 4, wherein:
2 said digital signal processor is programmed to calculate
3 the cross-correlation $R[k]$ employing only a center half of the
4 overlap region for $k = 0$.